

Operation Pluto

Chapter 11. Pipelines to the battlefields.

It must be admitted that the main purpose of this book was to fill in the considerable gaps in such other descriptions of Operation Pluto as have been published. These gaps were almost entirely on the naval side, probably for the very good reason that the necessary information was not available at the time. Captain Hutchings spent a great deal of time working on a book about Pluto but, as might be expected, he almost certainly found he was too closely involved, both practically and emotionally, to write the story in its widest aspect. His private papers now appear to be the only available major record of the naval side of the operation and without them it would have been impossible to give any idea of the spirit and determination of the thousand or more men who made up the crews of Force Pluto.

But when a pipeline had been laid and connected at both ends and pumping of fuel successfully achieved, there was still a very great deal of difficult work to be done before the essential petrol reached the forward depots where jerricans were refilled.

The petrol arriving at the storage and pumping stations in the Isle of Wight and at Dungeness had been pumped across England from refineries at Stanlow in Cheshire, Avonmouth near Bristol, Shellhaven and the Isle of Grain at the mouth of the Thames. Following the pumping across the Channel the Royal Engineers laid 6 ins. (150 mm.)
* victaulic lines to storage tanks and then across country,

* So called from the pressure joints.

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eventually to Calais, Ghent, Antwerp, Eindhoven and across the Rhine into Germany. Large numbers of men both from the Royal Army Service Corps and Pioneer Corps worked energetically and efficiently, often under extremely difficult conditions.

Laying the pipelines was no easy task, the winter weather and the state of the ground in the areas fought over contributed to the difficulties.

In the early days, working from Port en Bessin, the Royal Engineers were asked to lay a special line southwards to support operations during the battle of the Falaise Gap and this was done. It proved an unnecessary diversion of effort as the enemy was in full retreat soon after the line was completed and it is doubtful whether pipelaying for an isolated operation was a practical proposition.

Captain S.J. Papworth R.A.S.C. was engineer officer of 12 Bulk Storage Company which operated the shore installations at Boulogne and Calais. He recalled that Lt. Col. F.W.L. Danger R.A.S.C. was in charge of the Dumbo pumping station at Dungeness and Major W.B. Godden commanded another Bulk Storage Company which operated at Cherbourg and Boulogne. In an interesting paper he contributed a number of anecdotes of the Pluto operations on shore and valuable details of the functioning of pipeline arrangements.

He explained that to the east of the harbour at Boulogne was the Casino and beyond it a small bay with a Beach. This was the spot where the Hais and Hamel

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lines came ashore. The train shed housed the pumps and at the top of the beach was a small storage tank which was used to check the flow of newly laid lines.

Of course the army units dealing with the fuel as it arrived at the French coast were in close contact with the naval parties and Captain Eagle in particular. The army liaison officer with Captain Eagle was Captain Pipe, who was specially seconded to Force Pluto, and these two officers worked as a team - Eagle afloat in one of the shore-end barges and Pipe ashore with a bulldozer to haul in the end of the Hais cable when available. It seems possible that the difficulties and disappointments of this notoriously exasperating operation occasionally led to an exchange of picturesque news and views between the two friends. The army described them as occasions to be remembered!

It seems that Force Pluto got the first Hais lines across to Boulogne and functioning before the shore installations were ready to receive the fuel. To deal with this, emergency arrangements were made to fill rail tank cars at Boulogne harbour station by suspending hoses from the canopy of an island platform. As the other side of the platform was used for loading shells and rifle ammunition it is said that all worked very carefully.

Nevertheless, on one occasion an old French steam locomotive was being backed to pick up the petrol train when cinders from the boiler ignited petrol spilt on the track and immediately there was a great flare up under the first two tank cars, which were full, but luckily sealed.

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There was an immediate decision in favour of a rapid exodus, but as the flames died and there was no sign of the tank cars exploding, ⁴/₂ a 40 gallon foam extinguisher was brought into action and removed any further danger. ~~So~~ No harm was done except that it took a long time to find a driver and fireman to take the train away.

On another occasion the driver of a tank car train apparently got tired of waiting and pulled out of the station with soldiers still hanging on the tanks and petrol pouring on to the track from still running hoses. With the British Tommy's usual sang froid, one soldier asked another, "Where are we going?", to which the other replied "To Brussels, I think". Meanwhile, others had raced to the signal box and the over-enthusiastic driver and his train were brought to a halt.

When pumping started on a newly laid line there was continuous contact between Boulogne and Dungeness by telephone, Dungeness reporting as a fall in pressure indicated that another bursting disc had blown. The open end of a 6 ins. pipe was watched when it was reported that the last disc had gone. ⁴/₄ A rush of water would arrive shortly afterwards. The flow would be roughly measured by checking the time it took to fill a 4 gallon can.* As the flow dropped after the release of the build up of pressure, it would be measured again and compared with the calculated rate for the pumping pressure employed. No.3 Hais line, which had leaked slightly from the time it was laid, was eventually repaired by divers who cut out the fault and joined the ends with a Hais coupling.

* From this it will be appreciated that friction in the pipe reduced the flow of petrol (or water) to something considerably less than full bore.

At Calais, barges and trains were loaded, jerricans filled and road tankers filled. As there were better rail transport facilities from Calais for some time, almost the whole of the Pluto petrol went to the American army. Some petrol was pumped through to storage at Antwerp. Eventually every day 1,000 tons was loaded into railway tanks cars, 1,000 tons used to fill jerricans and 1,000 tons pumped through to Antwerp. It was said that the petrol flowed, almost without stopping from the Shell refinery at Stanlow in Cheshire to Boulogne, Calais, Antwerp and beyond the Rhine. It was a considerable technical achievement backed by efficient organisation and it would seem that the critics of Pluto can hardly have studied the overall picture.

Possibly one of the most common difficulties with which the pipeline authorities had to contend was pilfering. In Belgium petrol was an extremely rare and, therefore, valuable commodity.

A Royal Engineers Officer, George L. Ramage, recalled that he was posted to the R.E.H.Q. at Herenthals in Belgium which controlled the fuel pipeline in that area. The line ran across Belgium alongside the Leopold canal for the most part. Every few miles there were storage tanks which were kept to a certain level and controlled the flow. Every hour the tanks were dipped and the level recorded and reported to H.Q. As the pumping pressure could be translated into gallons per hour, it was possible to determine what the tank level should be and, if dipping showed that the input was less than it should be, it was a clear indication that the line was leaking or, more likely,

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being tapped. In spite of guards and frequent patrols the petrol had such a value on the black market that the risks involved in tapping a line with the petrol under pressure, and the punishment if caught, were no deterrent. One Belgian in charge of a factory explained that petrol rationing ceased when Pluto arrived! Apparently a hole was drilled in the pipeline, petrol drained off and then the hole plugged - if they had time. He was asked how people thought the tanks and other vehicles would get on if they did not get any fuel. The reply was that the front was a long way away now. Squadron Leader Lawler-Wilson, who told this story, also said that the Belgian in question was manager of the factory - which had produced aircraft parts for the Germans - by day and returned at night as watchman. This enabled him to carry out well concealed sabotage, using a cruet set which contained three grades of emery powder, fine, medium and coarse, which he inserted into the lubrication systems of machine tools according to whether he wished them to break down next day, next week or next month. In view of this, it was suggested that he could be forgiven for taking the petrol.

Another black market operator explained that they did not sell the petrol on the black market, but they used it to fuel the many lorries which took more important goods to the black market. Fans of that popular TV series, 'Dad's Army', particularly the earlier productions, no doubt had a soft spot for the black (market) sheep of the unit and, although it may be trite, one could say the system filled a long felt want.

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A great deal
Lt. Col. H.M. Everett, of the Royal Monmouthshire Engineers, was in charge of the pipelaying operations for the British army over ~~most~~ of the distance covered and he gave a number of interesting lectures on this part of the operation, after the war. His sons donated a lot of Colonel Everett's photos and documents to the Imperial War Museum, which now has a considerable amount of Pluto material.

One of the men involved in the actual pipe laying in France, Belgium, Holland and Germany, recalled that the only time a pipeline was bombed was when the troops were training in the Isle of Wight. But Lt. Col. H.M. Wilson confessed that he managed to succeed where the enemy failed. To quote him:

"At about the end of August 1944 my battalion, 1st Royal Norfolk Regiment, was for the first time since D-day temporarily out of the line, the 2nd Army having rolled on ahead after the battle of Falaise. Reinforcements had arrived and it was my job to get in some training. Selecting a piece of ground as suitable for mortar firing, I was happily expending ammunition when I suddenly noticed what I took to be a spout of water in the target area. I hurried to investigate and to my horror found I had hit Pluto and petrol was gushing out forcibly. I was about to dash off in my jeep to inform all the authorities I could think of, when two American with a jeep and trailer arrived. Within a few minutes they had fitted a new length of pipe, the flow having been turned off soon after the pressure fall was detected. The Yanks said this was happening all the time and that they maintained a routine

patrol. Instead of a court martial, all I got was a red face!" Colonel Wilson also mentioned the fact that although at times rations were cut and ammunition supplies were low, there was never any shortage of petrol. Original supplies must have been generous to allow for black marketeers, mortar bombs and legitimate losses due to leaks in the Hais and Hamel pipelines.

There were no doubt a great many incidents worthy of recording which happened during the laying of the many miles of pipeline across the territory regained from the German army. Alas, few have come to light and many of those engaged in this long, difficult and not very glamorous undertaking are dead or have forgotten the details.

But in April 1945 a ceremony was held to mark the extent of the Pluto achievement. Sir Donald Banks recalled that in company with the 4th Sea Lord, Admiral Palliser, the Rt. Hon. Geoffrey Lloyd and Clifford Hartley, he proceeded to Boulogne, inspecting a Conundrum laying operation on the way. This was the occasion when things did not go quite as planned with the laying of the Hamel pipe, as described in Chapter 9. A snarl up was almost a certainty with so many brass hats involved.

There were compensations for the inspecting party, as, after landing at Boulogne, they were entertained by the French naval Commander, Capitaine de Frégat Kolb-Bernard and his wife, Alice Delysia, known to millions as the most charming of actresses and entertainers.

Afterwards the party journeyed to Termonde, north of Brussels where the Quartermaster-General, Sir Thomas Riddell-Webster, laid the length of pipe connecting the Pluto system to the line to the front. Fuel now flowed directly from the Mersey to the Rhine and the section now laid was engraved with details recording the fact.

Stewarts and Lloyds of Corby, Northamptonshire, who later became a part of the British Steel Corporation, supplied 1,000 miles of steel pipe for the lines in Britain, 975 miles of Hamel pipe for the Channel crossings and no less than 5,000 miles of pipe for the lines on the continent. This was indeed an astounding achievement in the later stages of a war in which, as usual, Britain depended on ships and seamen to bring her supplies through waters infested with U-boats manned by highly efficient and determined crews.

The British Army statistics for the pipelines and shore installations on the continent differ quite considerably from those of Stewarts and Lloyds, which may be due to material supplied to the U.S. army for their pipelines. There is also a very large difference in the amount of petrol landed on the continent and the army figures for the consumption by 21 Army Group. Again, this may be due to the considerable tonnage supplied to the American forces, but there would still appear to be more to account for than the most energetic black market operations could have syphoned off. However, petrol was then ridiculously cheap compared to the present day.

The British Army figures were:

Consumption of petrol and aviation spirit about 4,000 tons a day with a 30 day reserve.

Length of pipe laid 1125 miles.

26 pumping stations.

Tankage with a capacity of 103,000 tons.

Weight of stores landed for pipeline work 92,000 tons.

Pipes were 20 ft. in length. Weight about 3 cwt.

British pipe 6" ID

American pipe 6½" XD

Pumps were of the reciprocating type normally working at 600 PSI. Pumping stations were 20 miles apart and could maintain a delivery of 1,000 tons a day - i.e. about a quarter of the daily requirement per pipeline.

650 men and 120 lorries were employed in laying and maintaining the pipelines and pumping stations, the men drawn from the Royal Engineers, R.A.S.C. and Pioneer companies, all well trained and efficient. Casualties were very light.

Overall supervision of construction was exercised by Lt. Col. W.A. Smailes, O.B.E., in the office of the Director of Works.

Lt. Col. Seagram, Royal Engineers, was concerned with Pluto from the early experimental stages and throughout the campaign. He visited other theatres of war and reported in detail on methods and general organisation used in the supply of POL for the armies.

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